

beloved lady whose death has now plunged us into the deepest grief.

While thus uttering words of sorrow we ask leave, sire, at the same time, to lay at your Majesty's feet our unfeigned and heartfelt congratulation upon your Majesty's accession to the Throne of your ancestors to reign over a people to whom happily your Majesty is no stranger, but who have by many experiences learned to recognise your great worth, and have been led to the sure hope that under your gracious rule the nation will continue to hold the proud position which it has gained under the guidance of your beloved mother.

That your Majesty's reign may be long, happy, and glorious, and that you may ever rule in the hearts as well as over the persons of a loving, dutiful, and grateful people is the earnest wish and ardent prayer of your Majesty's loyal and dutiful subjects, the President, Council, and Fellows of the Royal Society of London.

The King's reply was as follows :—

I am much gratified by the warm expression of your loyalty and affection, of your profound sympathy with our present grief, and of your loving appreciation of the goodness and great qualities of my dearly beloved mother. I thank you for your dutiful good wishes, and I share your hope that my reign also may be blessed by a continuous growth of my people in enlightenment, refinement, and power for good. The intellectual attainments and energies which your society so conspicuously represents are among the most precious possessions of the nation as aids in securing those high ends, and I remember with gratification the close connection of the society with its Royal founder and my other predecessors on this Throne, and the fact that I am a Fellow, as was also my dear father. You may feel assured of my constant interest in and protection of your work, and in token of my good will I shall be pleased to inscribe my name as patron in the charter book.

#### NOTES.

WE deeply regret to announce that Prof. G. F. Fitzgerald, F.R.S., died on Thursday, February 21, at the age of forty-nine years.

SIR ARCHIBALD GEIKIE retires to-day, February 28, from the office of Director-General of the Geological Survey of the United Kingdom and Director of the Geological Museum, after a service of nearly forty-six years. He has remained at his post after the usual age-limit in order to complete the annual summary of progress of the institution under his charge. It is understood that, being now freed from administrative duties, he intends to devote himself to the completion of several important Memoirs of the Geological Survey. He is succeeded in his appointment by his colleague, Mr. J. J. H. Teall, F.R.S., who is at present president of the Geological Society.

A VERY interesting announcement referring to the Leonid meteors has been received from the president of the Toronto Astronomical Society. He informs us that Mr. R. F. Stupart, vice-president of the Society, director of the Toronto Observatory and superintendent of the Meteorological Service of Canada, has sent him a copy of the following notes made by an observer at York Factory, Hudson's Bay :—"November 15, 1900. Very general display of shooting stars. Some very big ones N.W. to S.E. Sky full in shoals. November 16.—Shooting stars seen until daylight. Scared the people—they thought it was the end of the world." From these records it appears that a shower of Leonid meteors actually did occur last November.

IT is announced that a strong and influential committee has been formed with a view of erecting a triple monument in Heidelberg, by which the names of Bunsen, Kirchhoff and Helmholtz, whose lives and works are inseparably associated with the scientific progress and the rapid social and intellectual development of the alma mater of that city, should be thus lastingly and fittingly commemorated. It is proposed that special appeals for contributions should shortly be issued to

some of the learned societies and academies in the German Empire as well as to some personal friends and admirers of the late three famous men of science, whose friendship they are known to have enjoyed and by whose influence they have benefited in their subsequent scientific attainments. It is understood, however, that the general public will not be invited to contribute towards this Bunsen-Kirchhoff-Helmholtz memorial fund. The chairman of the committee is Dr. Adolf Kussmaul, Emeritus Professor of Medicine in the University of Strassburg, to whose suggestion the movement owes its origin.

THE current issue of the *Journal* of the Franklin Institute contains an interesting account of a discussion on the electric distribution of power in workshops, which brings out very clearly the numerous advantages to be gained by the adoption of this method of distributing power. The rapid success which the system has achieved in America points conclusively to its convenience and economy. As one of the speakers pointed out, electric power originally based its claim to attention on the ground that there was much less loss in distribution, and that a saving of 20 to 60 per cent. of the total power used might therefore be effected by substituting electric for shaft driving. This saving, although at first sight it appears great, may, however, be quite small when considered in relation to the total cost of turning out the finished article which the factory produces, amounting, perhaps, to but a small fraction of a per cent. But electric power, it was soon found, effects saving in many other ways, one of the chief of which is that it enables the positions of machinery to be decided with reference to the machine rather than to the shafting. This means that the available floor space can be much more thoroughly utilised. It was stated in the discussion that in the case of the Baldwin Locomotive Works, the adoption of electric driving has saved so much floor space that the works would have to be made about half as big again to give the same output with shaft driving. In addition to these advantages, electric power has proved more convenient, healthier and less dangerous. With all these recommendations it ought not to be long before it entirely displaces the old-fashioned systems.

A BILL intended to organise the National Observatory of the United States has been introduced into the Senate by Mr. Morgan. The object is to convert the U. S. Naval Observatory into a National Observatory, and the following sections from the text of the bill, given in *Science*, describe the proposed organisation :—"That the Director of the National Observatory shall be an eminent astronomer, appointed by the President, by and with the advice and consent of the Senate, at a salary of five thousand dollars per annum, and shall be selected from the astronomers of the National Academy of Sciences unless, in the judgment of the President, an American astronomer of higher scientific and executive qualifications shall be found. That the Secretary of the Navy may detail for duty as astronomers at the National Observatory such professors of mathematics and other officers of the Navy as he shall deem necessary in the interests of the public service; but on and after the passage of this Act no appointments shall be made of such professors unless required for service at the Naval Academy."

THE departmental committee appointed by the Board of Agriculture, and presided over by the Earl of Onslow, to inquire into the conditions under which agricultural seeds are at present sold, has completed the report upon the subject. The committee conclude that the seed trade in England is, on the whole, well conducted, and has of late years improved with the advance of science. Nevertheless, the majority of the committee recommend that one central station should be provided in the United Kingdom for the purpose of testing the purity and germinating power of seeds sent to it for official examination.

THE Berlin correspondent of the *Times* gives some of the results of the German census of December, 1900, which have just been published. The population of the German Empire has increased from 52,279,901 in 1895 to 56,345,014. Of this population 27,731,067 are males and 28,613,947 females. Over 83 per cent. of the whole population is contained in the four kingdoms; of these Prussia comes first with (in round figures) 34,500,000 inhabitants, and Bavaria second with 6,200,000. The figures for Saxony and Württemberg are 4,200,000 and 2,300,000 respectively. More than 16 per cent. of the population is resident in the thirty-three towns of over 100,000 inhabitants. Of these thirty-three towns the largest is Berlin, with a population of 1,884,151.

A REUTER telegram from Calcutta states that at a meeting of planters and agents interested in the indigo trade, held on February 20, it was decided to appoint a committee to wait on the Lieutenant-Governor in order to request him to grant a subsidy for further researches, as the results reported by the experts, Messrs. Hancock and Rawson, were highly promising. In the course of the meeting Mr. Karpeles said that Dr. Brunck's advice to Indian planters to give up the indigo trade was not likely to be followed. No reduction in planting was contemplated, and an increased output was expected from the manuring and blower processes.

AT the Wilts County Council's meeting on Friday last, reference was made to the fall of stones at Stonehenge, and a discussion ensued as to the taking of steps for the preservation of the remains. Prof. Story Maskelyne suggested the appointment of a small committee, not necessarily composed entirely of members of the council, but Lord Edmund Fitzmaurice, M.P. (the chairman of the council), explained that the matter was already being dealt with by the Charities and Records Committee, to whom the question of ancient monuments had been referred. It was also stated that the committee was in communication with the landowner and with the Society of Antiquaries, and hoped to report definitely at the next meeting.

WE have to regret the death, on February 15, at twenty-six years of age, of Mr. Fred. Pullar, son of Mr. L. Pullar of Bridge of Allan. In conjunction with Sir John Murray he had recently published an admirable survey of the depths of many Scottish freshwater lochs, illustrated with beautifully engraved charts. The manner of his death was heroic. While skating on Airthrey Loch, near Bridge of Allan, a young lady fell through the ice, and he at once skated to her assistance and plunged in with his skates on. He kept her afloat for ten minutes, but in spite of determined efforts to save them, both perished. Eye-witnesses testify that he might have saved himself but for his devotion to duty. He was an only son, and the warmest sympathy is felt and expressed for his family.

THE Reale Istituto Lombardo has made the following awards of prizes:—Under the Brambilla foundation for improvements in industries or manufactures in Lombardy, a gold medal and 1000 lire to Gadda and Co., of Milan, for electrical machinery; a gold medal and 500 lire to Reiser, Cattoretto, Gola, Norsa and Co., for their manufacture of embroidery with new shuttle machinery; and the same to Carlo Fino for the preparation of cattle food in which blood and molasses are used; and a premium of 300 lire to Virginio Rimoldi for machinery for sewing gloves. Under the Fossati foundation a prize of 2000 lire has been awarded to Prof. A. Stefani for his papers on the regeneration of the peripheric nervous fibres. A number of other prizes remain unawarded. The prizes now offered include a prize of the Institution for the best essay on the differential equations of applied electricity to be sent in by April 1, 1901; a similar prize for 1902 for a toponomastic exploration of a

district of Lombardy; two triennial medals for agricultural and industrial improvements in Lombardy; a Cagnola prize and gold medal for the best report dealing with hailstorms on the two sides of the Alpine chain, due April 1901; and a similar prize and medal for 1902, for an essay on the effects of gaseous emanations from manufactories on cultivated plants; another Cagnola prize for a discovery dealing with the cure of pellagra, the nature of miasms and contagion, the direction of balloons, or the prevention of forgery; a Brambilla prize for industrial improvements in Lombardy; Fossati prizes for 1901 and 1902 for essays on the anatomy of the encephalus of the higher animals; and for 1903, on the so-called nuclei of origin and termination of cranial nerves; a Kramer prize awarded to Italian engineers; a Secco-Comneno prize on the Italian phosphatic deposits; a Zanetti prize, open to Italian pharmaceutical chemists; and Pizzamiglio and Ciani prizes for educational and literary writings.

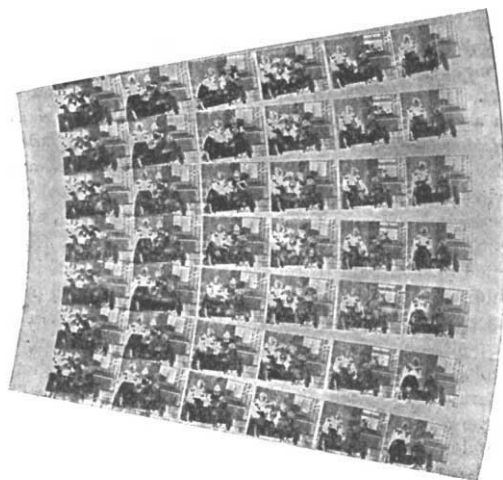
A CIRCULAR letter has been sent out seeking an expression of opinion from experts as to the advisability of founding a journal for the statistical study of biological problems. The letter is signed by Profs. Karl Pearson and Weldon, pioneers in this country in the line of work it is desired to encourage. *Biometrika* is the proposed title of the journal; thirty shillings the estimated cost of the first volume, to consist of four parts; and the proffered programme is an embodiment of memoirs on variation, inheritance and selection based on statistical examination, the development of statistical theory as applied to biological problems, and abstracts of memoirs on these subjects appearing elsewhere in each of the four leading European tongues. The proposal to found this journal is a natural sequel to the appearance during the last few years of the *Archiv f. Entwicklungs Mechanik* and, later, of the *American Journal of Physiology*, so largely devoted to the work of experiment on the living organism. The founders claim for statistical inquiry into biological phenomena a now established position, and give it as their opinion that "many persons are deterred from the collection of such data by the difficulty of finding such a means of publishing their results as this journal would afford." Statistical work in biology, to be of service, must be far-reaching and extensive, and it cannot be well dissociated from morphological inquiry of the better kind. A mere shot here and there at a miscellaneous collection of objects will not suffice now that the experimental stage has been passed, but upon prolonged work of an order involving laborious investigation with a fixed purpose, often with extended experiment, to be made, when possible, over a large area, can reliance alone be placed. Progress must necessarily be slow, and the accumulation of results worth publishing can only be expected after protracted research; and in these circumstances we are doubtful if the desire to burden the already over-crowded literature of biology with a new serial is not somewhat premature. It may be borne in mind that existing periodicals and the organs of societies are available for purposes of publication; and we could well desire for some of these that much of the so-called "systematic" work and quibbling over priority in nomenclature, fast becoming intolerable, might be replaced in work of the statistical and experimental order.

MR. W. A. HICKMAN, New Brunswick Government Commissioner, delivered a lecture on "New Brunswick" at the Imperial Institute on Monday. Like the rest of the maritime provinces of Canada, New Brunswick is situated much nearer Great Britain than any other of the important food-producing areas of the Empire. St. John, the capital, situated at the head of the Bay of Fundy, is the chief winter port of Canada, and the first lumber-shipping port in the world. The province contains 10,000,000 acres covered with heavy forests valuable



for lumber or wood pulp. The manufacture of this pulp from spruce is an industry yet in its infancy, only a few mills being in operation. The demand for the product for paper-making is practically unlimited, and the supply in New Brunswick very great, while the transport facilities of the province for shipment either to British or Eastern American ports are excellent. In 1891 there were no Government-supervised butter and cheese factories, now there are about 100; in 1895 there were no modern roller wheat mills, in 1900 about 80,000 barrels of flour were manufactured. The dykelands round the Bay of Fundy are the most fertile agricultural lands in the temperate zone, and perfectly self-sustaining; as also is the majority of the land situated along the shores of the rivers and lakes.

THE difficulties involved in the manipulation of a long celluloid film have prevented the extensive use of cinematographic apparatus by amateur photographers. To avoid this objection, Mr. Leo Kamm has invented a camera—the Kammatograph—in which a circular glass plate takes the place of the celluloid film. The plate can be made to rotate rapidly by means of a multiplying gear, and at the same time it travels laterally. A small lens forms an image upon the plate, and when the plate is put in motion these images are multiplied into a series of pictures arranged in a spiral. The character of the pictures and their distribution will be understood from the accompanying reproduction of a small part of a series produced in this way. The plate



is, of course, developed precisely in the same way as an ordinary negative, and a positive is then taken from it. To display the series of pictures it is only necessary to place the positive in the camera and to arrange the camera so that the beam from a lantern close to it can pass through the lens. The plate is then rotated as before, and the succession of the pictures projected upon the screen reproduces the original movements. About six hundred pictures can be photographed during the motion of a single plate, at a rate of about twelve or fourteen a second. The camera is very compact, and both as regards price and adaptability is within the reach of any photographer who wishes to secure pictures of rapidly changing scenes and moving objects. The small size of the pictures will not permit of projection upon a large screen, but the views can be shown large enough for ordinary purposes.

FROM the point of view of public health, it is undesirable to cut up open spaces used for recreation near large cities. The Commons and Footpaths Preservation Society directs attention to the fact that there are several private bills, now before Parliament, which propose to take power to interfere with commons, village greens and open spaces. The City and

North-East Suburban Electric Railway will seriously affect Hackney Marshes and Leyton Marshes, and, in a lesser degree, Victoria Park. The line is to be for the most part in tunnel, but where it crosses Hackney Marshes and Leyton Marshes, two exceptionally valuable open spaces, it will emerge from the tunnels and run on an embankment varying from 5 feet to 20 feet in height. Two short branch lines will also be erected on the surface of the Marshes, and altogether about twenty-five acres of common land will be abstracted. The North-East London Railway also seek powers to run a line on an embankment, varying from 14 to 31 feet in height, over Walthamstow and Leyton Marshes. The construction of more than two miles of high embankments on a much-used and highly valuable stretch of common land would practically destroy its utility as an open space and injure its amenity. The Society has therefore resolved to oppose the bills.

WE learn from the *Scientific American* that the Niagara Falls Power Company has about completed its second power transmission line between Niagara Falls and Buffalo. The new line possesses special interest because of the fact that the cables are made of aluminium. The three-phase current is transmitted by three cables, each composed of thirty-seven strands. The old line consists of six copper cables, each of which has nineteen strands. One advantage gained in the use of aluminium is that the cables being so much lighter, the span between poles, which in the old line is about 75 feet, averages 112½ feet in the new line. On the completion of the aluminium line, the voltage of the current that is transmitted will be raised from 11,000 to 22,000 volts.

WE have received from Mr. R. F. Stupart, director, a copy of the Report of the Meteorological Service of Canada for the year 1897, a large quarto volume of 292 pages. Observations were made at 314 stations; at the chief stations, where all the ordinary observations are taken day and night at equal intervals of time not exceeding four hours, at the telegraphic reporting stations, where the observations are taken three times daily, and at some few of the special stations, the observers are paid for the time which they devote to the duties required of them, but at the bulk of the stations the work is purely voluntary, the Meteorological Department at Toronto simply supplying the necessary instruments. A liberal exchange of telegraphic reports takes place between the United States and Canada, from which data a very comprehensive daily weather chart is constructed and on the basis of these charts forecasts and storm-warning notices are issued. The storm warnings are very successful, about 86 per cent. being fully verified, while the direction from which the wind would blow was fully verified, to the extent of about 94 per cent. The daily forecasts obtain an average success of 81 per cent. They are disseminated to the agricultural community by discs on the baggage vans of outgoing morning trains. The tables of observations and results are very carefully prepared, and the whole report furnishes an important contribution to climatological knowledge.

THE Society for the Protection of Birds has issued a small pamphlet, by Surgeon-General Bidie, urging the need of effective protection for wild birds in India.

Two numbers (18 and 19) of the *Circular* of the Royal Botanic Gardens, Ceylon, have reached us; the one giving a list of the kinds of ornamental and timber trees best suited for planting in the island, and the other describing certain caterpillars which infest the tea-plant.

MUCH interest attaches to Mr. J. P. Smith's account, in the *American Naturalist*, of the coiled larval shell found attached to the lower extremity of many specimens of *Baculites* from the Cretaceous beds of Dakota. This straight-shelled Cretaceous

cephalopod is accordingly considered to be descended from a coiled Clymenia-like ancestor.

We have received the *South-Eastern Naturalist* for 1900. In addition to several papers, it contains an account of the congress of the South-Eastern Union of Scientific Societies, held at Brighton in June under the presidency of Prof. Howes. Bird protection was one of the subjects discussed, in connection with which the president expressed his opinion that the present unsatisfactory state of affairs is largely due to the apathy of local authorities in putting enactments in force.

THE systematic position of the sand-grouse forms the subject of a paper, by Dr. R. W. Shufeldt, in the January number of the *American Naturalist*. It is concluded that these birds form a subordinal group intermediate between the pigeons and the game-birds. In the same serial Mr. G. H. Parker discusses certain tortoises with abnormally formed horny shields, in which correlated abnormalities likewise occur in the underlying bony plates. And he is led from this association to conclude that in the primitive chelonians each plate was covered by its own proper shield, as in the case of the glyptodons of South America.

TO the February number of the *Zoologist* Mr. G. Renshaw contributes an account of all the known specimens, whether alive or dead, by which the quagga has been or is represented in menageries or museums. About ten living examples of this extinct equine appear to have been exhibited from time to time in menageries. Three skins, a skeleton, and two skulls represent the animal in the United Kingdom, in addition to which two other skeletons have been stated to be those of quaggas. Continental museums are more fortunate, possessing among them, in addition to several skeletons and skulls, no less than eleven mounted skins, one of which is that of a fetus. In the South African Museum this once abundant species is represented only by a foal. A skeleton at Philadelphia, said to be that of a quagga, completes the list of known remains. The author states his belief that the skin and skeleton in the British Museum belong to an individual which died in the Zoological Gardens previous to 1838, in reality they were not acquired till 1864.

In the *Journal de Physique* for January, M. E. Mathias applies Weierstrass's signs to determine the mutual induction of two parallel circular currents. The advantage of this method is that it enables the potential energy to be expressed as a function of the radii and distance apart of the circuits in a rapidly converging series.

MR. GILBERT NEWTON LEWIS suggests a new conception of thermal pressure and a theory of solutions in the *Proceedings of the American Academy* (xxxvi. 9). The theory, according to which the thermal pressure of any phase is equal to the pressure which the substance would exert if under the same conditions as a perfect gas, suggested itself in the consideration of certain remarkable general laws which treat of heterogeneous equilibrium in which the several phases are subject to different pressures. The same assumption is alone sufficient, according to the author, to explain all the laws of dilute solutions. The relations of Mr. Lewis's theory to the theory of van der Waals are also discussed.

THE January number of *La Géographie* contains a paper by Dr. A. G. Nathorst, of Stockholm, on the distribution of the wolf and the musk ox in high northern latitudes, and especially in Eastern Greenland. Count Henri de la Vaulx contributes a paper on his journeys in Patagonia.

THE new number of the *Mitteilungen aus den deutschen Schutzgebieten* is devoted to an account of the work of the German members of the British and German Boundary Commission between Lakes Nyasa and Tanganyika. There are

special reports, on the astronomical and geodetic work, by Dr. E. Kohlschütter, and on the country and people, by Captain Herrmann. Four sheets of an excellent map on a scale of 1:100,000, by the members named and Lieut. Glauning, accompany the reports.

THE Eighth Annual Report (for 1899) of Dr. S. Calvin, the State Geologist, forms vol. x. of the Iowa Geological Survey. It contains a useful index geological map of the State; a report on the mineral production, which includes coal, clay, stone, gypsum, and lead, zinc and iron ores; and sundry geological reports. Mr. Stuart Weller deals with the succession of fossil faunas in the Kinderhook Beds at Burlington. These faunas exhibit a gradual transition from those with Devonian to those with Carboniferous characters. The Devonian element is for the most part exhibited by the pelecypods, while the brachiopods are usually Carboniferous in aspect, and there is an overlapping and intermingling of these forms. The geological reports deal very fully with different counties in Iowa.

IN the *Proceedings of the Liverpool Geological Society* (vol. viii. part iv., 1900) we find an interesting address by Prof. W. A. Herdman on "The Geological Succession of Morphological Ideals." Referring to the many distinct groups of animal life found in the Lower Cambrian rocks, and which are usually taken to indicate that "we are already pretty far up in the history of evolution, and very far in time from the primitive fauna," he expresses the opinion "that the first differentiation of the great groups of invertebrates may have taken place very rapidly in pre-Cambrian times at the surface of the sea amongst soft-bodied pelagic animals." He then discusses the chief faunas of the Palæozoic rocks, pointing out the successive organic types which dominate as "representatives of the ideals which Nature seemed striving to attain in the successive geological periods."

THE observatory on Mount Etna, being situated at a height of 2950 metres, at the foot of the central crater and only 300 metres below the summit, it has been assumed that the ground on which it is built must be almost continually in a state of tremor. To show how unfounded the supposition is, Messrs. A. Riccò and L. Franco have made a comparative study of the tromometric records from the observatory there and from that at Catania, the instrument employed being the normal tromometer 1½ metres long, and the readings being taken six times a day for nearly eight years. In 46 per cent. of the observations on Etna, and in 62 per cent. of those at Catania, the tromometer was found to be in motion. The higher figure at Catania is partly due to the influence of external agents; for, when the sea is rough, the tromometer there is never still, while on the mountain it is unaffected. Also, taking only those observations made when the wind was strong, or very strong, the tromometer on Etna was in motion in 59 per cent. of all such cases, and that at Catania in 94 per cent. On the other hand, when there was little or no wind and the sea was nearly, or quite, smooth, the corresponding figures are 38 for Etna and 69 for Catania.

THE fifth part of "Zoological Results based on Material from New Britain, New Guinea, Loyalty Islands and Elsewhere, collected during the years 1895-1897," by Dr. Arthur Willey, has been published by the Cambridge University Press. The work will be brought to a conclusion by the publication of one other part in the course of the present year, and when it appears the six parts will be reviewed together.

THREE new volumes in Ostwald's series of "Klassiker der exakten Wissenschaften," published by Mr. Engelmann, Leipzig, have been received. No. 114 contains letters and other communications written by Volta in 1792-1795 upon the subject

of animal electricity, and No. 118 contains Volta's accounts of investigations made by him in the period 1796-1800. No. 115 is devoted to de Saussure's research in hygrometry (1783). The three volumes are edited by Dr. A. J. von Oettingen, and are in German, like the other volumes in the series.

AN interesting synthesis of fumaric acid is given in the current number of the *Berichte* by O. Doebner. Under the action of pyridine, condensation between glyoxylic and malonic acids is readily effected. The condensation may be imagined to take place with the intermediate formation of maleic acid, but attempts to isolate this were unsuccessful.

IN his account last year of the properties of the remarkable hexafluoride of sulphur, M. Moissan mentioned that other bodies were formed at the same time containing sulphur and fluorine, and in the current number of the *Comptes rendus* he gives, in conjunction with M. Lebeau, a further contribution to this subject. The compound described is sulphuryl fluoride,  $\text{SO}_2\text{F}_2$ , and it is obtained by the regulated action of fluorine upon sulphur dioxide. The conditions of the reaction had to be carefully studied, as the reaction of these two gases is so violent that explosions frequently occur. The new gas is necessarily accompanied by others, owing to the operations being carried out in glass vessels, and the separation of these is effected by liquefying the whole at  $-80^\circ\text{C}$ . and fractionating *in vacuo*. Sulphuryl fluoride is a colourless, odourless gas, solidifying in boiling oxygen, melting at  $-120^\circ\text{C}$ ., and boiling at  $-52^\circ\text{C}$ . Although in some respects it resembles its halogen homologues, in its stability and inertness in other reactions it recalls the properties of the hexafluoride. Thus it is without action upon water even in a sealed tube at  $150^\circ\text{C}$ . M. Moissan remarks that these experiments show that although fluorine is undoubtedly at the head of the halogen group, it is a little removed from the others, having special and characteristic properties which show affinities rather to oxygen than to chlorine.

THE additions to the Zoological Society's Gardens during the past week include a Patas Monkey (*Cercopithecus patas*), a Green Monkey (*Cercopithecus callitrichus*), an Anubis Baboon (*Cynocephalus anubis*), an African Civet Cat (*Viverra civetta*), a Denham's Bustard (*Eupodotis denhami*), a Royal Python (*Python regius*) from Falaba, Sierra Leone, presented by Mr. C. E. Birch; two White-collared Mangabeys (*Cercocebus collaris*), a Bay Duiker (*Cephalophus dorsalis*) from West Africa, presented by Mr. E. R. Cookson; a Herring Gull (*Larus argentatus*), European, presented by Mr. C. A. Hamond; a Jay (*Garrulus glandarius*), a Jackdaw (*Corvus monedula*), European, presented by Miss N. Eskill; a Merlin (*Falco oesalon*), European, presented by Mr. Gregory Haines; a Goshawk (*Accipiter palumbarius*), European, presented by Major-General A. A. Kinloch, C.B.; a Barn Owl (*Strix flammea*), European, presented by Mr. A. Masters; two Dwarf Chameleons (*Chamaeleon pumilus*) from South Africa, an Axis Deer (*Cervus axis*) from India, deposited; a Hoffmann's Sloth (*Choloepus hoffmanni*) from Panama, a Great Ant-eater (*Myrmecophaga jubata*) from South America, two Horned Tragopans (*Cerionis satyra*) from the South-east Himalayas, four Californian Quails (*Callipepla californica*) from California, four Virginian Colins (*Ortyx virginianus*) from North America, purchased.

#### OUR ASTRONOMICAL COLUMN.

##### ASTRONOMICAL OCCURRENCES IN MARCH.

March 2. 10h. 46m. to 12h. 3m. Moon occults  $\kappa$  Cancri, (mag. 5.0).

6. Outer minor axis of Saturn's ring =  $15''\cdot 24$ .

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- March 7. 13h. 3m. Minimum of Algol ( $\beta$  Persei).  
 9. Mars in conjunction with  $\alpha$  Leonis (Regulus), Mars  $3^\circ 49'$  North.  
 10. 9h. 52m. Minimum of Algol ( $\beta$  Persei).  
 11. Saturn in conjunction with  $\pi$  Sagittarii (mag. 3.0). Saturn  $1^\circ$  South.  
 13. 6h. 41m. Minimum of Algol ( $\beta$  Persei).  
 14. 11h. Jupiter in conjunction with the moon. Jupiter  $3^\circ 25'$  South.  
 14. 21. Saturn in conjunction with the moon. Saturn  $3^\circ 26'$  South.  
 15. Venus. Illuminated portion of disc =  $0\cdot 980$ .  
 15. Mars. Illuminated portion of disc =  $0\cdot 979$ .  
 24. 7h. 37m. to 8h. 40m. Moon occults  $\alpha^1$  Tauri (mag. 5.8).  
 25. 6h. 32m. to 7h. 42m. Moon occults  $\iota$  Tauri (mag. 5.5).  
 26. 9h. 15m. to 10h. 6m. Moon occults  $\delta$  Orionis. (mag. 5.6).  
 28. 6h. 16m. to 6h. 40m. Moon occults  $\iota$  Cancr. (mag. 5.9).  
 29. 5h. 30m. to 6h. 33m. Moon occults  $A^2$  Cancr. (mag. 5.8).

VARIABILITY OF EROS.—The recent announcement by Dr. Oppolzer concerning the variation in the brightness of the minor planet Eros is confirmed by the accounts of two French observers, who communicate their results in the current issue of *Comptes rendus* (vol. cxxxii. pp. 396-398).

The first paper, by M. F. Rossard, describes a series of determinations made at the observatory of Toulouse with a Brunner equatorial of  $0\cdot 23$  metre aperture. Estimates with comparison stars were taken on the nights of February 14, 15, 16 at short intervals. Evidence of rapid variation was detected, the difference exceeding a magnitude, the extreme range being from  $9\cdot 3$  to  $11\cdot 0$ . The times of the various phases observed were as follows:—

	h. m.		h. m.
1901 Feb. 14	9 43 min.	1901 Feb. 16	7 34 max.
	14 10 48 max.		16 8 56 min.
	15 8 10 max.		16 10 3 max.
	15 9 32 min.		16 11 30 min.
	15 10 44 max.		

The comparison of these minima and maxima indicates that the variation in brightness shows a little less than ten periods in a day, *i.e.* the duration of the period is about 2h. 22m.; also that the period of increase from minimum to maximum is about 15 minutes shorter than the interval from maximum to the following minimum.

The second note is by M. Ch. André. He says the total variation takes place in about 6 hours, and in character is similar to the variable star U Pegasi, but with the stationary period a little longer, so that the planet Eros is to be regarded as a photometric variable, and may consist of a double system formed of two asteroids, whose diameters are slightly less than  $3:2$ , and whose orbital plane passes through the earth. As the distance of Eros from the earth is about two-thirds that of the sun, the inclination of the line of sight on the plane of the orbit will change rapidly and continuously. The study of these variations will be important in giving a series of light curves, in which the only variation is that of the inclination of the line of sight on the plane of the orbit of the satellite.

NEW VARIABLE STAR,  $\iota$ . 1901 (Cygni).—Mr. Stanley Williams announces the variability of the star situated in the position

$$\left. \begin{array}{l} \text{RA.} = 19^\circ 28' 15'' \\ \text{Decl.} = +28^\circ 0' 5'' \end{array} \right\} (1855).$$

The estimated photographic magnitude varied as follows:—

	Mag.
1900 Oct. 27	$10\cdot 7$
Nov. 18	$9\cdot 9$
Dec. 15	$10\cdot 5$

A chart of the region surrounding the star is given, and reference made to a previously published photograph of the region by Dr. Max Wolf (*Knowledge*, 1892, p. 130), on which the star is not shown. (*Astronomische Nachrichten*, Bd. 154, No. 3687).